



UH8102

CMOS IC

LOW POWER HALL EFFECT SWITCH

DESCRIPTION

UH8102 is a low-power integrated Hall switch designed to sense the applied magnetic flux density and give a digital output, which indicates the present condition of the magnitude sensed.

It mainly designed for battery-powered system and hand-held equipment, such as cellular flip-phones and PDA's, in which power consumption is one major concern. The typical power consumption of **UH8102** at down to 10uW in 2.7V supply.

For **UH8102A**, the output will be at the "Low" level when no magnetic field is applied. When the applied magnetic flux density is stronger than the switching threshold, the output would be at the "High" level.

For **UH8102B**, the output will be at the "High" level when no magnetic field is applied. When the applied magnetic flux density is stronger than the switching threshold, the output would be at the "Low" level.

FEATURES

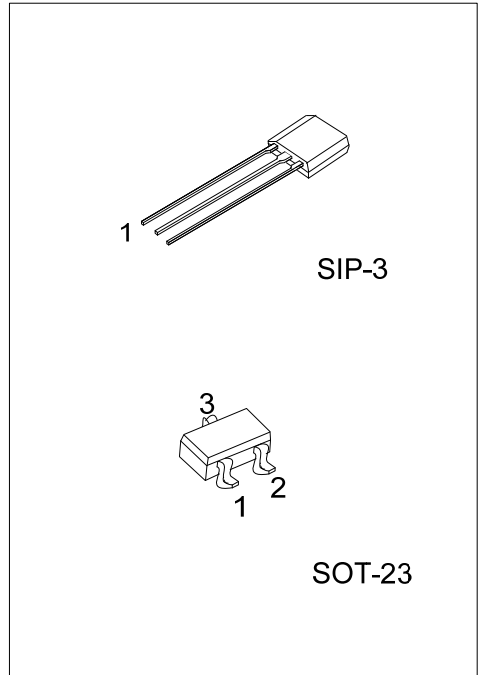
- *Micropower Operation
- *2.4V to 5.5V Battery Operation
- *Offset Canceling Technology
- *Superior Temperature Stability
- *Extremely Low Switch-Point Drift
- *Insensitive to Physical Stress

ORDERING INFORMATION

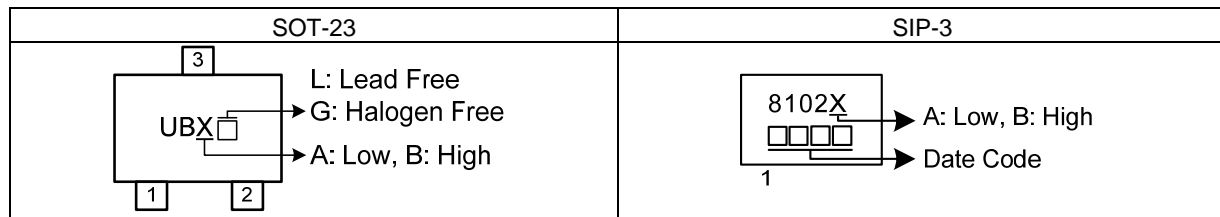
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UH8102XL-AE3-R	UH8102XG-AE3-R	SOT-23	I	O	G	Tape Reel
UH8102XL-G03-B	UH8102XG-G03-B	SIP-3	I	G	O	Tape Box
UH8102XL-G03-K	UH8102XG-G03-K	SIP-3	I	G	O	Bulk

Note: Pin Assignment: I: V_{DD} O: Output G: GND

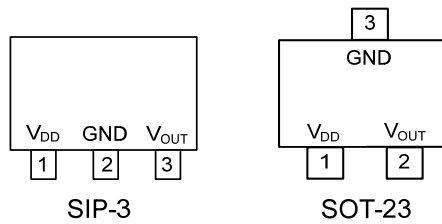
UH8102XG-AE3-R	(1) Packing Type	(1) B: Tape Box, K: Bulk, R: Tape Reel
	(2) Package Type	(2) AE3:SOT-23, G03: SIP-3
	(3) Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free
	(4) No Magnetic Field	(4) A: Low, B: High



MARKING



PIN CONFIGURATION

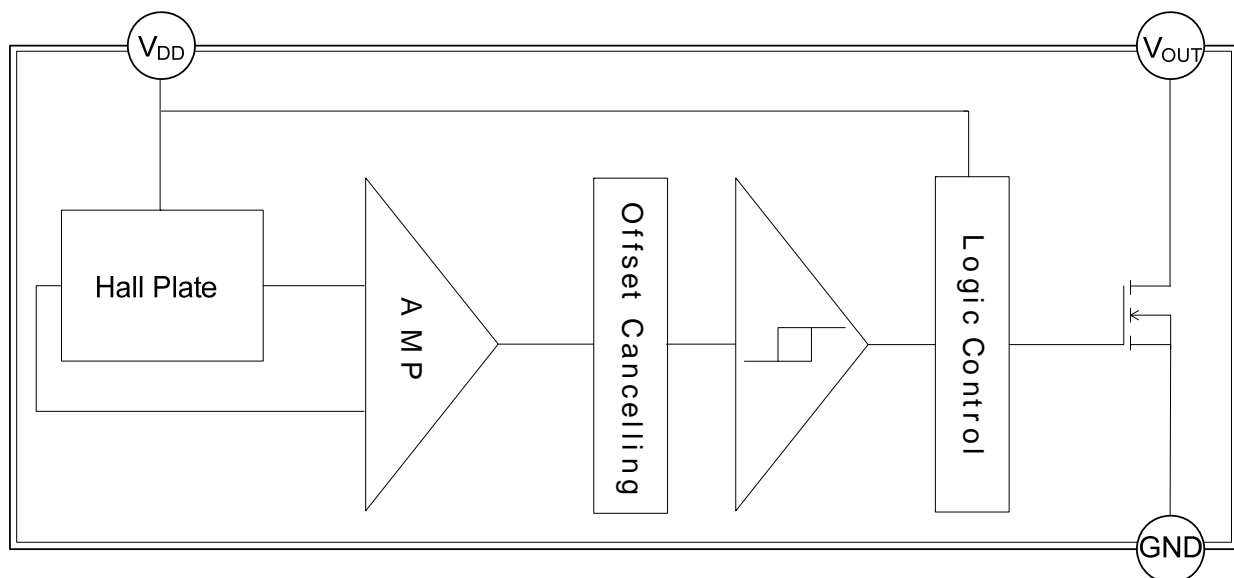


PIN DESCRIPTION

PIN NAME	PIN TYPE	PIN DESCRIPTION
V_{DD}	P	Power Supply
V_{OUT}	O	Digital Output
GND	G	Ground

Note: O: Output, P: Power Supply, G: Ground.

BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Magnetic Flux Density	B	Unlimited	mT
Supply Voltage	V_{DD}	5.5	V
Supply current	I_Q	-1 ~ +2.5	mA
Power Dissipation	SIP-3	P_D	400
	SOT-23		200
Junction Temperature	T_J	+150	$^\circ\text{C}$
Operation Temperature	T_{OPR}	-40 ~ +85	$^\circ\text{C}$
Storage Temperature	T_{STG}	-40 ~ +150	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ RECOMMENDED OPERATING CONDITIONS ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{DD}	Operating	2.4	2.7	5.5	V
Output Voltage	V_{OUT}		-0.3	2.7	5.5	V
Ambient Temperature	T_A		-40	25	85	$^\circ\text{C}$

■ ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Output Saturation Voltage	V_{SAT}	$V_{DD}=2.7\text{V}$		0.1		V
Output Leakage Current	I_{OFF}				0.01	
Supply Current	$I_{DD(EN)}$	$V_{DD}=2.7\text{V}$	Chip enable	1.1		mA
	$I_{DD(DIS)}$		Chip disable	2.5		μA
	$I_{DD(AVG)}$		Average supply current		3	20
Operating Time	T_{OP}	$V_{DD}=2.7\text{V}$		60		μs
Standby Time	T_{SD}			150		ms
Duty Cycle	D.C.				0.04	

■ MAGNETIC CHARACTERISTICS ($V_{DD}=2.7\text{V}$, $T_A=25^\circ\text{C}$, unless otherwise specified)

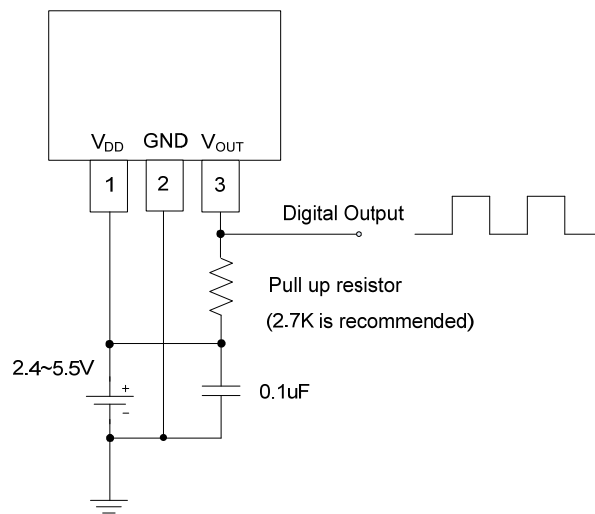
For UH8102A (**LOW** level when no magnetic field is applied)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Operation Points	$ B_{OP} $	South or North pole to branded side, $ B > B_{OP} $, V_{OUT} On	1			Gauss
Release Points	$ B_{RP} $	South or North pole to branded side, $ B < B_{RP} $, V_{OUT} Off			70	
Hysteresis	$ B_{OP}-B_{RP} $	$ B_{OPX}-B_{RPX} $		10		

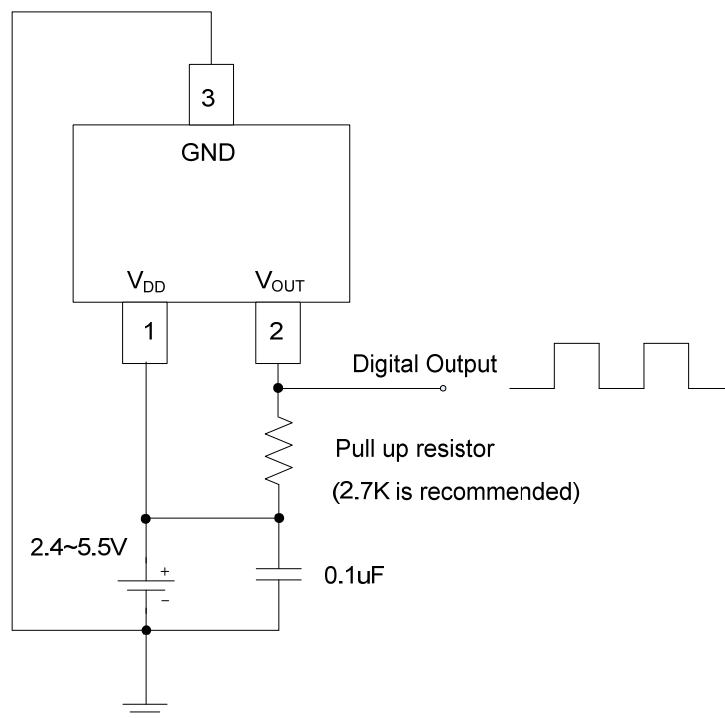
For UH8102B (**HIGH** level when no magnetic field is applied)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Operation Points	$ B_{OP} $	South or North pole to branded side, $ B > B_{OP} $, V_{OUT} On			70	Gauss
Release Points	$ B_{RP} $	South or North pole to branded side, $ B < B_{RP} $, V_{OUT} Off	1			
Hysteresis	$ B_{OP}-B_{RP} $	$ B_{OPX}-B_{RPX} $		10		

■ TYPICAL APPLICATION CIRCUIT

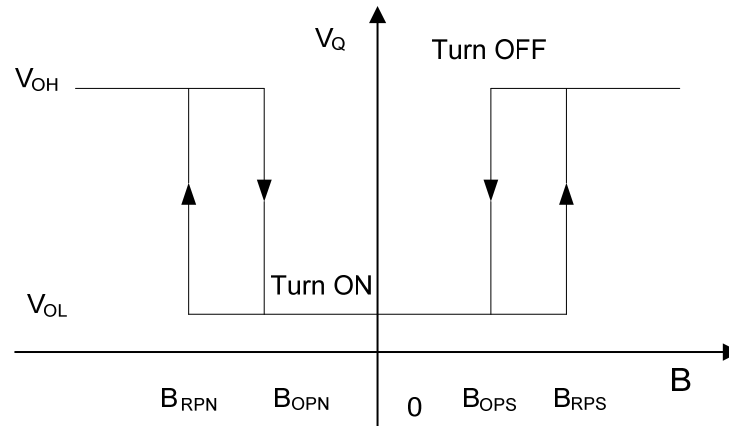


SIP-3

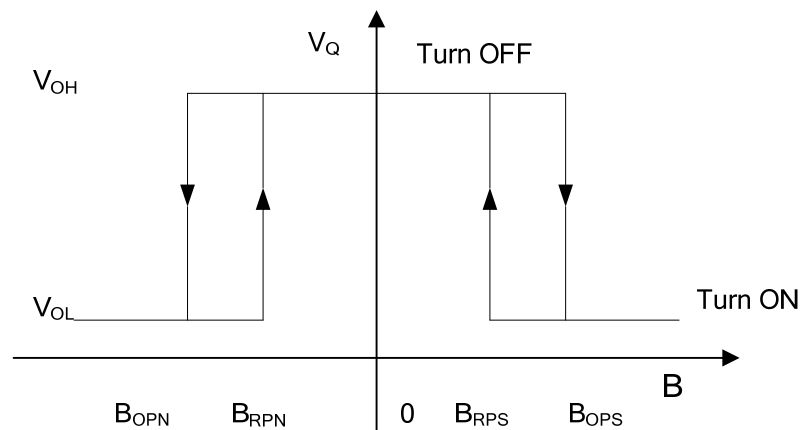


SOT-23

■ MAGNETIC FLUX



UH8102A (**LOW** level when no magnetic field is applied)



UH8102B (**HIGH** level when no magnetic field is applied)

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